BROADWATER Conservation District

Broadwater County Drought Resiliency Index

May 2018

Headwaters Mainstem (Missouri) Basin:

- Record-setting snowfall occurred in the mountains this winter and spring, the bulk of the water contained in the snowpack still needs to enter the rivers and streams. Rivers and streams have begun to rise due to the low and mid-elevation snowmelt and will continue throughout the next few weeks.
- Current stage height at the Missouri River streamflow gauge below Toston is 9.65 ft; Flood stage is 10.5 ft.
- April through July forecasted Inflow to Canyon Ferry is anticipated at 152%.
- **A close eye should be kept on the weather. Water users are strongly advised to monitor National Weather Service weekly weather and runoff forecasts this spring and summer.**

Snowpack info from Apr 1, 2018 NRCS Basin Outlook Report & Canyon Ferry info from 2018 CFR Operational Plans

Precipitation & Temperature Data

Current Data as of May 20

Townsend Temperature

May 2018 Avg: 53°F

Min: 29°F

Max: 79°F

May 2017 Avg: 54°F

April 2018 Avg: 38°F

Min: 12°F

Max: 63°F

April 2017 Avg: 45°F

Countywide Precipitation

BROADWATER COUNTY REGION	TOTAL =1 gauge per region	AVG =2/3 gauges per region	MAX	MIN
N (Silos)	-	1.70	0.86	0.02
NE (Gurnett Crk—Confed Crk)	-	1.83	0.76	0.02
NW (Winston)	-	1.72	0.60	0.10
E (Deep Crk)	-	1.67	1.28	0.05
S (Wheat MT)	1.49	-	0.66	0.04
SW (Radersburg)	2.01	-	1.17	0.31
WEST (River Road)	1.92	-	0.70	0.17
TOWNSEND (Weather Station)	2.30	-	0.86	0.02
TOSTON (Agrimet)	2.07	-	0.73	0.01

Countywide Precip (16 total gauges, 2 no May data) **Total** 25.29 **Avg** 1.81 **Max** 1.28 (5/11/2018–Deep Crk)

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Snowpack Data

Snow Water Equivalent (SWE) = The amount of water contained within the snowpack

Station	Date	Snow Depth (in)	SWE (in)	SWE % Avg.	Avg. SWE (in)	Max SWE observed
Boulder	**May 21, 2018**	**44**	**15.9**	**119**	**13.32**	**27.4 (2011)**
Boulder	May 21, 2017	39	14.1	106		
Tizer	**May 21, 2018**	**0**	**0.1**	**7**	**1.37**	**10.1 (1995)**
Tizer	May 21, 2017	0.00	0.00	0		

Missouri River Basin Snowpack Graph

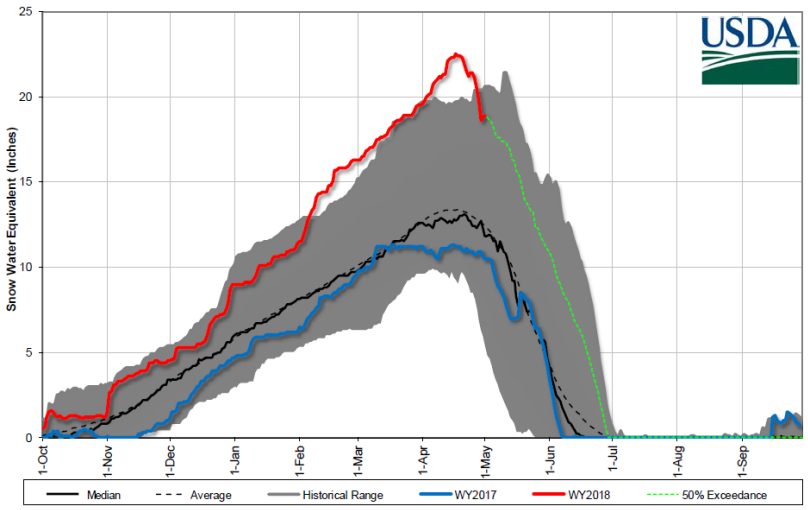
Below Toston above Smith River

Red Line = 2018 Snowpack

Blue Line = 2017 Snowpack

Black Line = 30 Yr. Average

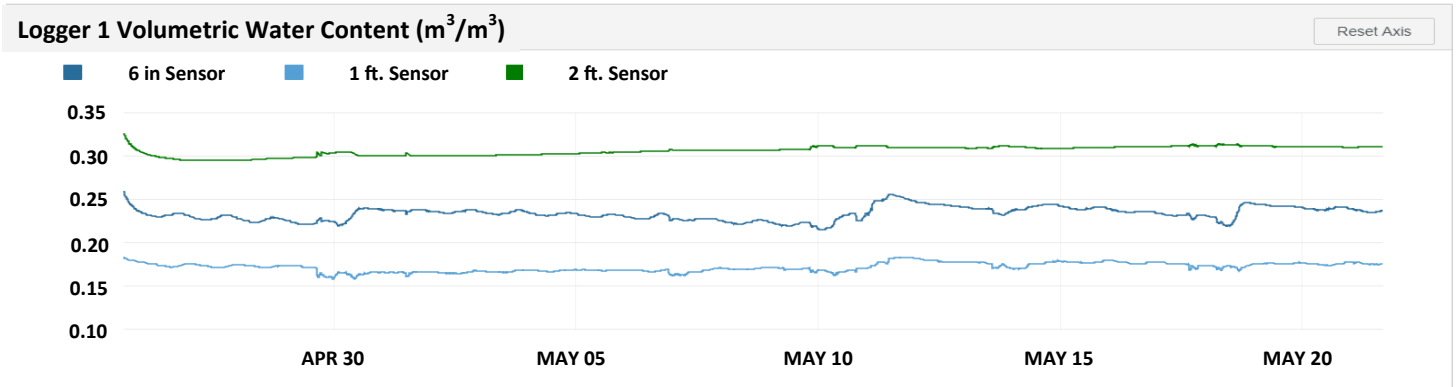
Grey Range = Historical Max & Min

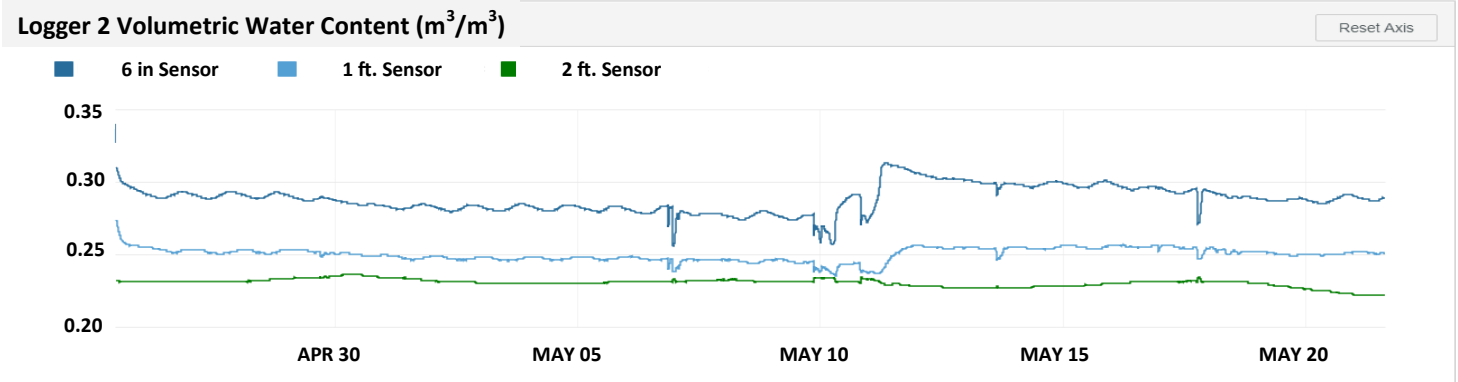


NEW! Soil Moisture Data

See map on following page for logger locations

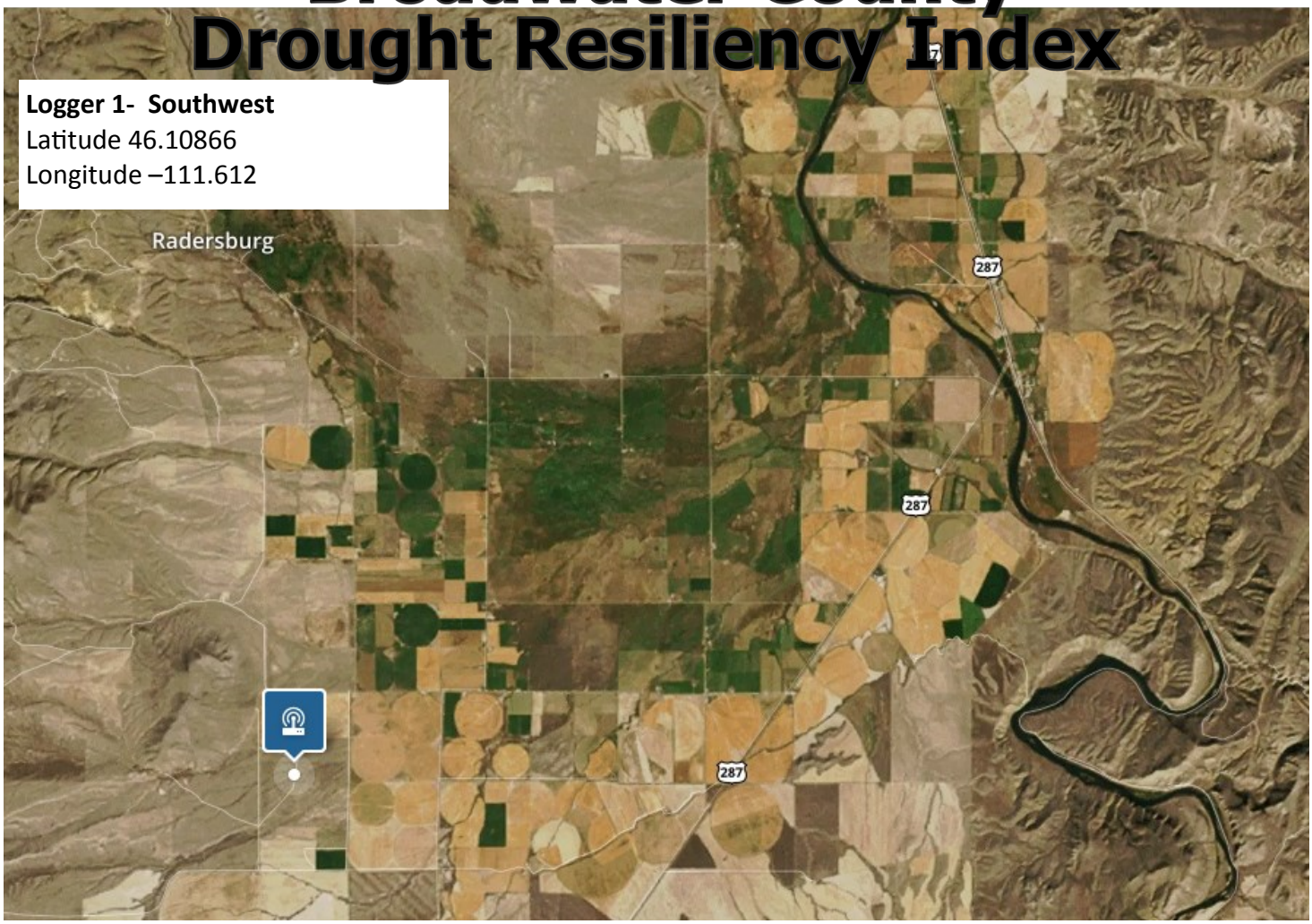
Real Time Data Available at this link. Username: Katie.mumford@mt.usda.gov | Password: GeologyRocks!

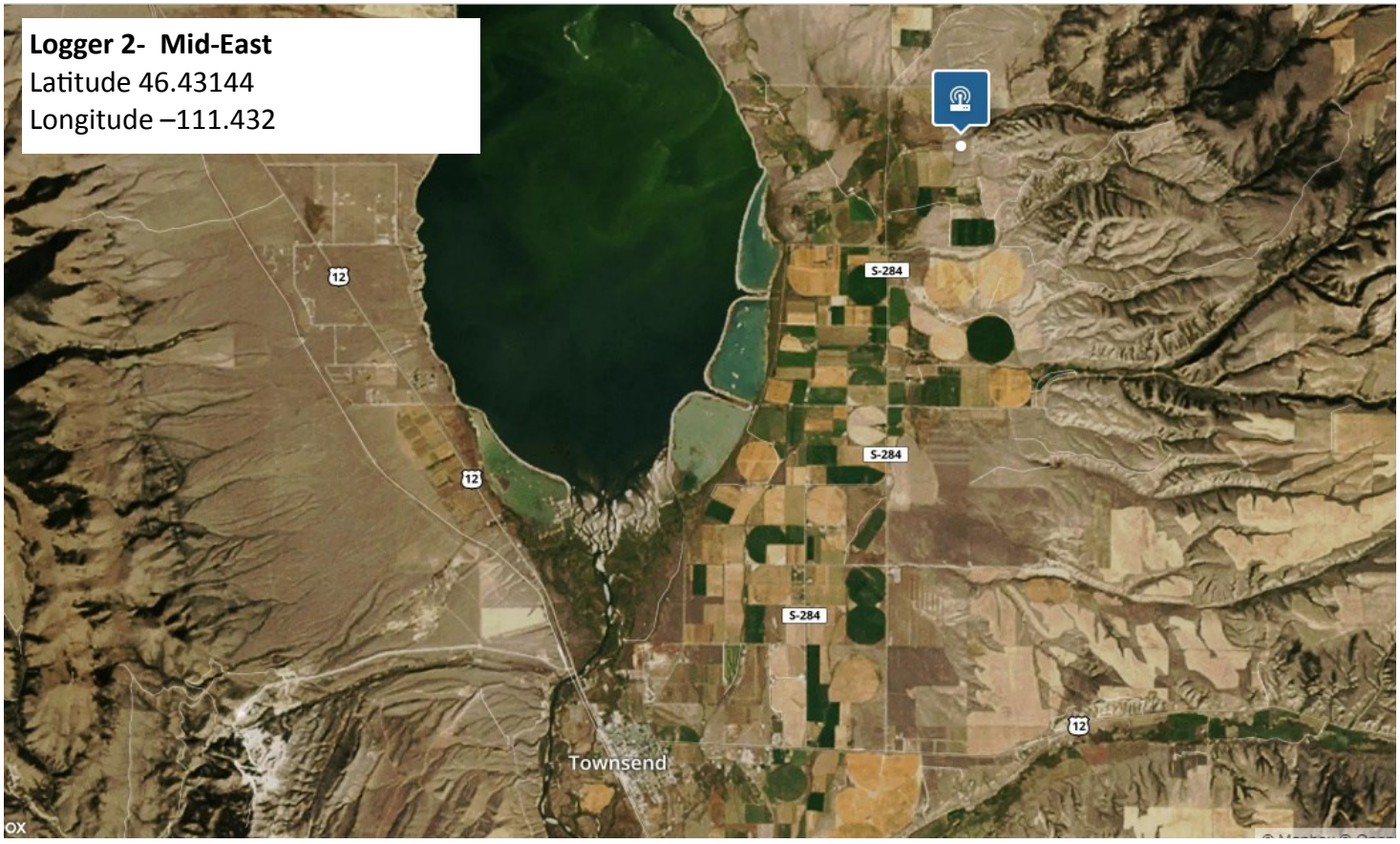




For more information contact Katie Mumford 406-266-3146 x102 or Katie.mumford@mt.usda.gov

Broadwater County
Drought Resiliency Index





Broadwater County Drought Resiliency Index

Water Storage Data

Canyon Ferry Reservoir

Date	Storage (KAF)	% Capacity	Daily Mean Inflow (cfs)	Inflow % of 30 Yr Avg
May 21, 2018	**1,564,623**	**83**	**24,174**	**256**
May 21, 2017	1,652,767	87	11,436	124

Daily Reservoir Data as of 05/21/2018

Pool Elevation is 3786.9 Feet
Pool Elevation to Fill 10.1 Feet
Reservoir Storage is 1,564,623 Acre-Feet
Reservoir Storage to Fill 327,265 Acre-Feet
Reservoir Inflow is 24,174 CFS
Reservoir Outflow is 14,754 CFS
Reservoir is 82.7 % Full*
Reservoir Flood Control Pool is filled 0.0 %
Missouri River Flow is 14,702 CFS

Streamflow Data

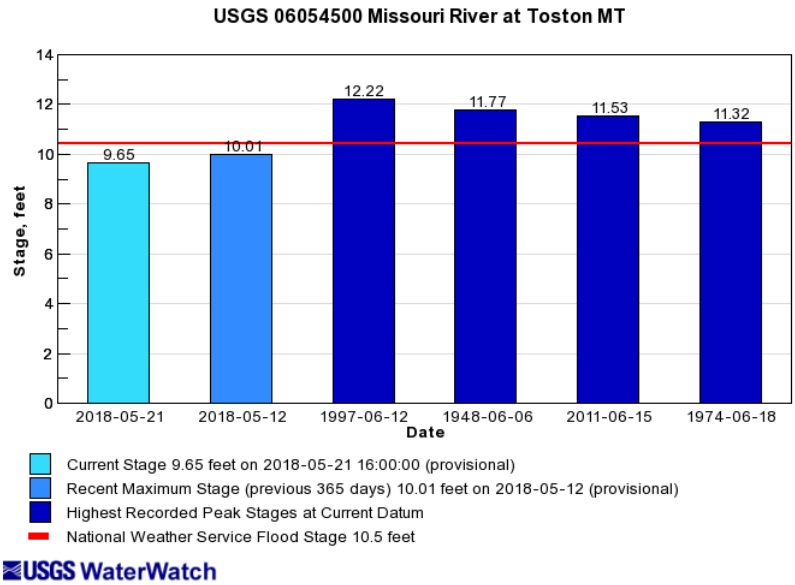
Missouri River Flow @ Toston (cfs)

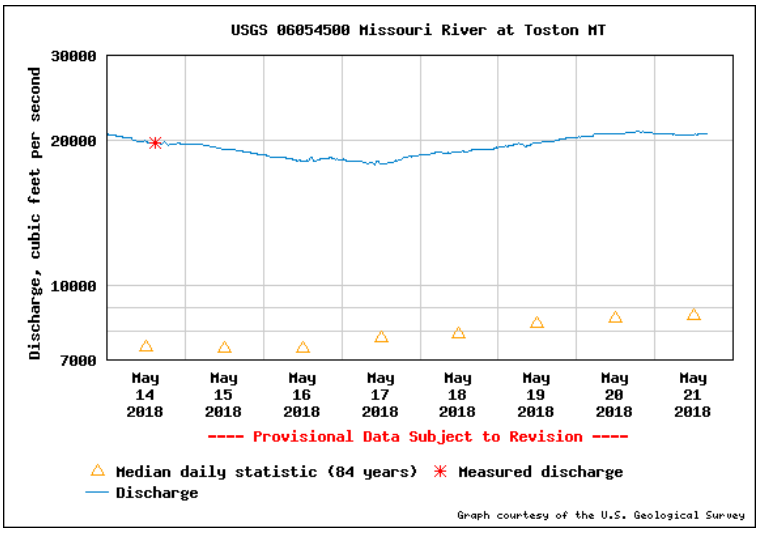
Date	Daily Mean Discharge	% Avg.	83 Yr. Avg
May 21, 2018	**9490**	**110**	**8620**
May 21, 2017	5,400	63	

Deep Creek Flow (cfs)

All values in red are estimates of flow based off of rating tables and extrapolated data. Hahn discharge was measured at 3.84 stage height recently which is comparable to 3.93 stage height measured on 5/21/18. This data is considered the most accurate. Above BM and Stocks are thought to be high and are extensions of the rating.

Date	Stocks Bridge	Above BM Canal	Hahn Field
May 21, 2018	**290 cfs 11600 MI**	**291 cfs 11640 MI**	**257 cfs 10280 MI**
May 21, 2017	73.32 cfs 2933 MI	70.12 cfs 2805 MI	63.41 cfs 2536 MI
6 Yr. Avg. (2013-2018)	92.33 cfs 3693 MI	79.10 cfs 3164 MI	79.30 cfs 3172 MI





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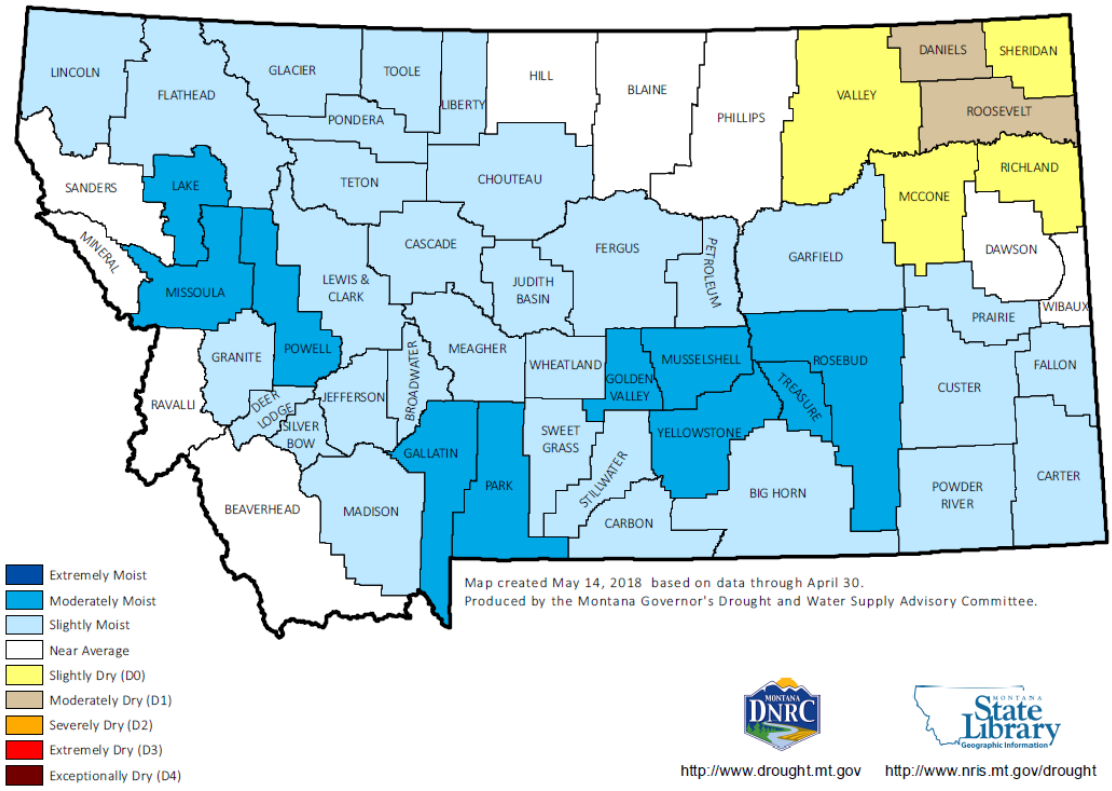
BROADWATER Conservation District

Montana Drought Status by County - May 1, 2018

Montana Moisture Status by County

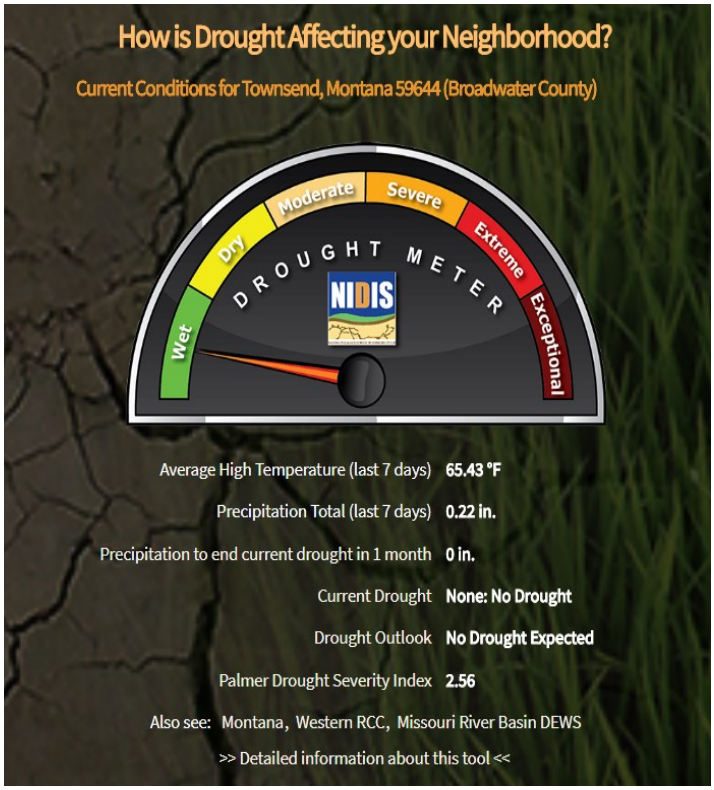
In coordination with the Montana Governor's Drought and Water Supply Advisory Committee, the Montana State Library publishes monthly maps of moisture status by county.

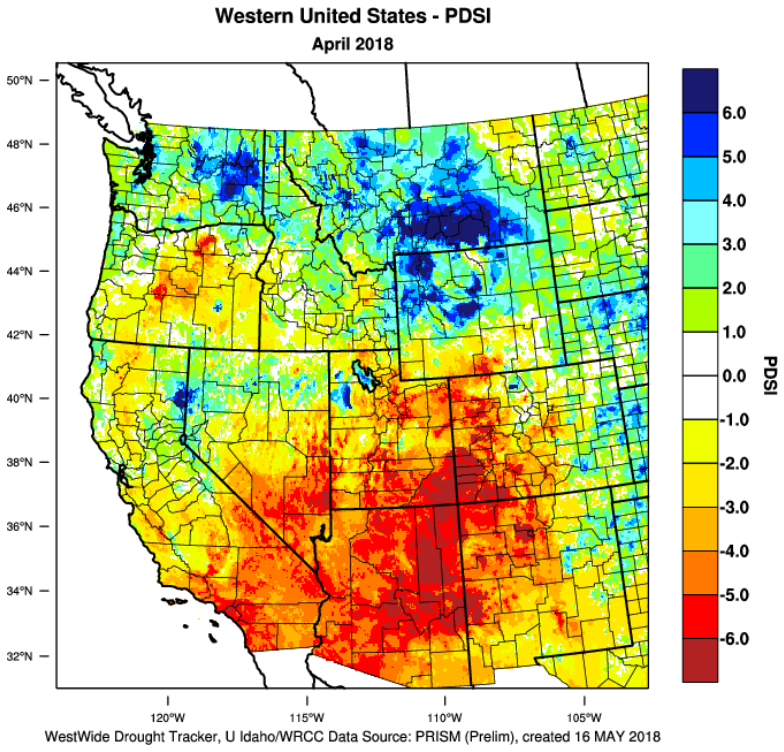


http://www.drought.mt.gov http://www.nris.mt.gov/drought

Palmer Drought Severity Index (PDSI)

The Palmer Drought Severity Index (PDSI) uses readily available temperature and precipitation data to estimate relative dryness. It is a standardized index that spans -10 (dry) to +10 (wet). It has been reasonably successful at quantifying long-term drought. As it uses temperature data and a physical water balance model, it can capture the basic effect of global warming on drought through changes in potential evapotranspiration. Monthly PDSI values do not capture droughts on time scales less than about 12 months; more pros and cons are discussed in the Expert Guidance.





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